

HAWAII ADMINISTRATIVE RULES

TITLE 12

DEPARTMENT OF LABOR AND INDUSTRIAL RELATIONS

SUBTITLE 8

DIVISION OF OCCUPATIONAL SAFETY AND HEALTH

PART 2

GENERAL INDUSTRY

CHAPTER 77.1

LOGGING AND WOOD PROCESSING

§12-77.1-1 Incorporation of federal standard  
 §12-77.1-2 Definitions

Historical note: Chapter 12-77.1 is based substantially upon Chapter 12-77. [Eff 12/6/82; R 8/10/95]

**§12-77.1-1 Incorporation of federal standard.** The following provisions of Title 29, Code of Federal Regulations, published by the Office of the Federal Register, National Archives and Records Administration, are made part of this chapter:

- 1) Section 1910.265, entitled "Sawmills" published on June 27, 1974; and the amendments published on May 28, 1975; October 24, 1978; November 7, 1978; April 12, 1988; August 6, 1990; March 7, 1996; June 18, 1998; and September 13, 2005; and
- 2) Section 1910.266, entitled "Logging Operations" published on October 12, 1994; and the amendments published on February 8, 1995; August 9, 1995; September 8, 1995; March 7, 1996; and April 3, 2006, except as provided in section 12-77.1-2. [Eff 8/10/95; am 1/16/96; am 11/16/96; am 3/29/99; am 3/31/06; am 12/21/06; am 8/26/07] (Auth: HRS §396-4) (Imp: HRS §396-4)

**§1910.265 Sawmills.**

- (a) General requirements. Application. This section includes safety requirements for sawmill operations including, but not limited to, log and lumber handling, sawing, trimming, and planing; waste disposal; operation of dry kilns; finishing; shipping; storage; yard and yard equipment; and for power tools and affiliated equipment used in connection with such operations, but excluding the manufacture of plywood, cooperage, and veneer.
- (b) Definitions applicable to this section.
  - (1) **A-frame.** The term **A-frame** means a structure made of two independent columns fastened together at the top and separated at the bottom for stability.
  - (2) **Annealing.** The term **annealing** means heating then cooling to soften and render less brittle.
  - (3) **Binder.** The term **binder** means a chain, cable, rope, or other approved material used for binding loads.
  - (4) **Boom.** The term **boom** means logs or timbers fastened together end to end and used to contain floating logs. The term includes enclosed logs.
  - (5) **Brow log.** The term **brow log** means a log placed parallel to a roadway at a landing or dump to protect vehicles while loading or unloading.
  - (6) **Bunk.** The term **bunk** means a cross support for a load.
  - (7) **Cant.** The term **cant** means a log slabbed on one or more sides.

- (8) **Carriage (log carriage).** The term **carriage** means a framework mounted on wheels which runs on tracks or in grooves in a direction parallel to the face of the saw, and which contains apparatus to hold a log securely and advance it towards the saw.
- (9) **Carrier.** The term **carrier** means an industrial truck so designed and constructed that it straddles the load to be transported with mechanisms to pick up the load and support it during transportation.
- (10) **Chipper.** The term **chipper** means a machine which cuts material into chips.
- (11) **Chock (bunk block) (cheese block).** The terms **chock**, **bunk block**, and **cheese block** mean a wedge that prevents logs or loads from moving.
- (12) **Cold deck.** The term **cold deck** means a pile of logs stored for future removal.
- (13) **Crotch lines.** The term **crotch lines** means two short lines attached to a hoisting line by a ring or shackle, the lower ends being attached to loading hooks.
- (14) **Dog (carriage dog).** The term **dog** means a steel tooth, one or more of which are attached to each carriage knee to hold log firmly in place on carriage.
- (15) **Drag saw.** The term **drag saw** means a power-driven, reciprocating crosscut saw mounted on suitable frame and used for bucking logs.
- (16) **Head block.** The term **head block** means that part of a carriage which holds the log and upon which it rests. It generally consists of base, knee, taper set, and mechanism.
- (17) **Head rig.** The term **head rig** means a combination of head saw and log carriage used for the initial breakdown of logs into timbers, cants, and boards.
- (18) **Hog.** The term **hog** means a machine for cutting or grinding slabs and other coarse residue from the mill.
- (19) **Husk.** The term **husk** means a head saw framework on a circular mill.
- (20) **Industrial truck.** The term **industrial truck** means a mobile powerdriven truck or tractor.
- (21) **Kiln tender.** The term **kiln tender** means the operator of a kiln.
- (22) **Lift truck.** The term **lift truck** means an industrial truck used for lateral transportation and equipped with a power-operated lifting device, usually in the form of forks, for piling or unpling lumber units or packages.
- (23) **Live rolls.** The term **live rolls** means cylinders of wood or metal mounted on horizontal axes and rotated by power, which are used to convey slabs, lumber, and other wood products.
- (24) **Loading boom.** The term **loading boom** means any structure projecting from a pivot point to guide a log when lifted.
- (25) **Log deck.** The term **Log deck** means a platform in the sawmill on which the logs remain until needed for sawing.
- (26) **Lumber hauling truck.** The term **lumber hauling truck** means an industrial truck, other than a lift truck or a carrier, used for the transport of lumber.
- (27) **Log haul.** The term **log haul** means a conveyor for transferring logs to mill.
- (28) **Package.** The term **package** means a unit of lumber.
- (29) **Peavy.** The term **peavy** means a stout wooden handle fitted with a spike and hook and used for rolling logs.
- (30) **Pike pole.** The term **pike pole** means a long pole whose end is shod with a sharp pointed spike.
- (31) **Pitman rod.** The term **pitman rod** means connecting rod.
- (32) **Resaw.** The term **resaw** means band, circular, or sash gang saws used to break down slabs, cants, or flitches into lumber.
- (33) **Running line.** The term **running line** means any moving rope as distinguished from a stationary rope such as a guyline.
- (34) **Safety factor.** The term **safety factor** means a calculated reduction factor which may be applied to laboratory test values to obtain safe working stresses for wooden beams and other mechanical members; ratio of breaking load to safe load.
- (35) **Saw guide.** The term **saw guide** means a device for steadying a circular or bandsaw.
- (36) **Setwork.** The term **setwork** means a mechanism on a sawmill carriage which enables an operator to move the log into position for another cut.
- (37) **Sorting gaps.** The term **sorting gaps** means the areas on a log pond enclosed by boom sticks into which logs are sorted.

- (38) **Spreader wheel.** The term **spreader wheel** means a metal wheel that separates the board from the log in back of circular saws to prevent binding.
- (39) **Splitter.** The term **splitter** means a knife-type, nonrotating spreader.
- (40) **Sticker.** The term **sticker** means a strip of wood or other material used to separate layers of lumber.
- (41) **Stiff boom.** The term **stiff boom** means the anchored, stationary boom sticks which are tied together and on which boom men work.
- (42) **Swifter.** The term **swifter** is a means of tying boom sticks together to prevent them from spreading while being towed.
- (43) **Telltale.** The term **telltale** means a device used to serve as a warning for overhead objects.
- (44) **Top saw.** The term **top saw** means the upper of two circular saws on a head rig, both being on the same husk.
- (45) **Tramway.** The term **tramway** means a way for trams, usually consisting of parallel tracks laid on wooden beams.
- (46) **Trestle.** The term **trestle** means a braced framework of timbers, piles or steelwork for carrying a road or railroad over a depression.
- (c) Building facilities, and isolated equipment.
  - (1) Safety factor. All buildings, docks, tramways, walkways, log dumps, and other structures shall be designed, constructed and maintained so as to support the imposed load in accordance with a safety factor.
  - (2) Work areas. Work areas under mills shall be as evenly surfaced as local conditions permit. They shall be free from unnecessary obstructions and provided with lighting facilities in accordance with American National Standard for Industrial Lighting A11.1-1965, which is incorporated by reference as specified in §1910.6.
  - (3) Floors. Flooring in buildings and on ramps and walkways shall be constructed and installed in accordance with established principles of mechanics and sound engineering practices. They shall be of adequate strength to support the estimated or actual dead and live loads acting on them with the resultant stress not exceeding the allowable stress for the material being used.
    - (i) [Reserved]
    - (ii) Areas beneath floor openings. Areas under floor openings shall, where practical, be fenced off. When this is not practical, they shall be plainly marked and telldaes shall be installed to hang over these areas.
    - (iii) Floor maintenance. The flooring of buildings, docks, and passageways shall be kept in good repair. When a hazardous condition develops that cannot be immediately repaired, the area shall be guarded until adequate repairs are made.
    - (iv) Nonslip floors. Floors, footwalks, and passageways in the work area around machines or other places where a person is required to stand or walk shall be provided with effective means to minimize slipping.
  - (4) Walkways, docks, and platforms.
    - (i) Width. Walkways, docks, and platforms shall be of sufficient width to provide adequate passage and working areas.
    - (ii) Maintenance. Walkways shall be evenly floored and kept in good repair.
    - (iii) Docks. Docks and runways used for the operation of lift trucks and other vehicles shall have a substantial guard or shear timber except where loading and unloading are being performed.
    - (iv) Elevated walks. All elevated walks, runways, or platforms, if 4 feet or more from the floor level, shall be provided with a standard railing except on loading or unloading sides of platforms. If height exceeds 6 feet, a standard toe board also shall be provided to prevent material from rolling or falling off.
    - (v) Elevated platforms. Where elevated platforms are used routinely on a daily basis they shall be equipped with stairways or fixed ladders in accordance with §1910.27.
    - (vi) Hazardous locations. Where required, walkways and stairways with standard handrails shall be provided in elevated and hazardous locations. Where such passageways are over walkways or work areas, standard toe boards shall be provided.
  - (5) Stairways.
    - (i) Construction. Stairways shall be constructed in accordance with §1910.24.

- (ii) Handrails. Stairways shall be provided with a standard handrail on at least one side or on any open side. Where stairs are more than four feet wide there shall be a standard handrail at each side, and where more than eight feet wide, a third standard handrail shall be erected in the center of the stairway.
  - (iii) Lighting. All stairways shall be adequately lighted as prescribed in paragraph (c)(9) of this section.
- (6) Emergency exits including doors and fire escapes.
  - (i) Opening. Doors shall not open directly on or block a flight of stairs, and shall swing in the direction of exit travel.
  - (ii) Identification. Exits shall be located and identified in a manner that affords ready exit from all work areas.
  - (iii) Swinging doors. All swinging doors shall be provided with windows; with one window for each section of double swinging doors. Such windows shall be of shatterproof or safety glass unless otherwise protected against breakage.
  - (iv) Sliding doors. Where sliding doors are used as exits, an inner door shall be cut inside each of the main doors and arranged to open outward.
  - (v) Barriers and warning signs. Where a doorway opens upon a railroad track or upon a tramway or dock over which vehicles travel, a barrier or other warning device shall be placed to prevent workmen from stepping into moving traffic.
- (7) Air requirements. Ventilation shall be provided to supply adequate fresh healthful air to rooms, buildings, and work areas.
- (8) Vats and tanks. All open vats and tanks into which workmen could fall shall be guarded.
- (9) Lighting.
  - (i) Adequacy. Illumination shall be provided and designed to supply adequate general and local lighting to rooms, buildings, and work areas during the time of use.
  - (ii) Effectiveness. Factors upon which the adequacy and effectiveness of illumination will be judged, include the following:
    - (a) The quantity of light in foot-candle intensity shall be sufficient for the work being done.
    - (b) The quality of the light shall be such that it is free from glare, and has correct direction, diffusion, and distribution.
    - (c) Shadows and extreme contrasts shall be avoided or kept to a minimum.
- (10) [Reserved]
- (11) Hazard marking. Physical hazard marking shall be as specified in §1910.144 of this part.
- (12) [Reserved]
- (13) Hydraulic systems. Means shall be provided to block, chain, or otherwise secure equipment normally supported by hydraulic pressure so as to provide for safe maintenance.
- (14) [Reserved]
- (15) Gas piping and appliances. All gas piping and appliances shall be installed in accordance with the American National Standard Requirements for the Installation of Gas Appliances and Gas Piping Z21.30-1964, which is incorporated by reference as specified in §1910.6.
- (16) [Reserved]
- (17) [Reserved]
- (18) Conveyors.
  - (i) Standards. Construction, operation, and maintenance of conveyors shall be in accordance with American National Standard B20.1-1957, which is incorporated by reference as specified in §1910.6.
  - (ii) Guarding. Spiked live rolls shall be guarded.
- (19) Stationary tramways and trestles.
  - (i) Foundations and walkways. Tramways and trestles shall have substantial mud sills or foundations which shall be frequently inspected and kept in repair. When vehicles are operated on tramways and trestles which are used for foot passage, traffic shall be controlled or a walkway with standard handrails at the outer edge and shear timber on the inner edge shall be provided. This walkway shall be wide enough to allow adequate clearance to vehicles. When walkways cross over other thoroughfares, they shall be solidly fenced at the outer edge to a height of 42 inches over such thoroughfares.

- (ii) Clearance. Stationary tramways and trestles shall have a vertical clearance of 22 feet over railroad rails. When constructed over carrier docks or roads, they shall have a clearance of 6 feet above the driver's foot rest on the carrier, and in no event shall this clearance be less than 12 feet from the roadway. In existing operations where it is impractical to obtain such clearance, telltales, electric signals, signs or other precautionary measures shall be installed.
- (20) Blower, collecting, and exhaust systems.
  - (i) Design, construction, and maintenance. Blower collecting, and exhaust systems should be designed, constructed, and maintained in accordance with American National Standards Z33.1-1961 (For the Installation of Blower and Exhaust Systems for Dust, Stock, and Vapor Removal or Conveying) and Z12.2-1962 (R1969) (Code for the Prevention of Dust Explosion in Woodworking and Wood Flour Manufacturing Plants), which are incorporated by reference as specified in §1910.6.
  - (ii) Collecting systems. All mills containing one or more machines that create dust, shavings, chips, or slivers during a period of time equal to or greater than one-fourth of the working day, shall be equipped with a collecting system. It may be either continuous or automatic, and shall be of sufficient strength and capacity to enable it to remove such refuse from points of operation and immediate vicinities of machines and work areas.
  - (iii) Exhaust or conveyor systems. Each woodworking machine that creates dust, shavings, chips, or slivers shall be equipped with an exhaust or conveyor system located and adjusted to remove the maximum amount of refuse from the point of operation and immediate vicinity.
  - (iv) [Reserved]
  - (v) Dust chambers. Exhaust pipes shall not discharge into an unconfined outside pile if uncontrolled fire or explosion hazards are created. They may empty into settling or dust chambers, designed to prevent the dust or refuse from entering any work area. Such chambers shall be constructed and operated to minimize the danger of fire or dust explosion.
  - (vi) Hand removal of refuse. Provision for the daily removal of refuse shall be made in all operations not required to have an exhaust system or having refuse too heavy, bulky, or otherwise unsuitable to be handled by the exhaust system.
- (21) Chippers.
  - (i) Whole-log chippers. The feed system to the chipper shall be arranged so the operator does not stand in direct line with the chipper spout (hopper). The chipper spout shall be enclosed to a height of not less than 36 inches from the floor or the operator's platform. A safety belt and lifeline shall be worn by workmen when working at or near the spout unless the spout is guarded. The lifeline shall be short enough to prevent workers from falling into the chipper.
  - (ii) Hogs.
    - (a) Hog mills shall be so designed and arranged that from no position on the rim of the chute shall the distance to the cutter knives be less than 40 inches.
    - (b) Hog feed chutes shall be provided with suitable and approved baffles, which shall minimize material from being thrown from the mill.
    - (c) Employees feeding hog mills shall be provided with safety belts and lines unless guarded.
- (22) [Reserved]
- (23) Bins, bunkers, hoppers, and fuel houses.
  - (i) Guarding. Open bins, bunkers, and hoppers whose upper edges extend less than 3 feet above working level shall be equipped with standard handrails and toe boards, or have their tops covered by a substantial grill or grating with openings small enough to prevent a man from falling through.
  - (ii) Use of wheeled equipment to load bins. Where automotive or other wheeled equipment is used to move materials into bins, bunkers, and hoppers, adequate guard rails shall be installed along each side of the runway, and a substantial bumper stop provided when necessary.

- (iii) Exits, lighting, and safety devices. Fuel houses and bins shall have adequate exits and lighting, and all necessary safety devices shall be provided and shall be used by persons entering these structures.
- (iv) Walkways. Where needed, fuel houses and bins shall have a standard railed platform or walkway near the top.
- (24) Ropes, cables, slings, and chains.
  - (i) Safe usage. Ropes, cables, slings, and chains shall be used in accordance with safe use practices recommended by the manufacturer or within safe limits recommended by the equipment manufacturer when used in conjunction with it.
  - (ii) Hooks. No open hook shall be used in rigging to lift any load where there is hazard from relieving the tension on the hook from the load or hook catching or fouling.
  - (iii) Work by qualified persons. Installation, inspection, maintenance, repair, and testing of ropes, cables, slings, and chains shall be done only by persons qualified to do such work.
  - (iv) Slings. Proper storage shall be provided for slings while not in use.
  - (v) Ropes or cables.
    - (a) Wire rope or cable shall be inspected when installed and once each week thereafter, when in use. It shall be removed from hoisting or load-carrying service when kinked or when one of the following conditions exists:
      - (1) When three broken wires are found in one lay of 6 by 6 wire rope.
      - (2) When six broken wires are found in one lay of 6 by 19 wire rope.
      - (3) When nine broken wires are found in one lay of 6 by 37 wire rope.
      - (4) When eight broken wires are found in one lay of 8 by 19 wire rope.
      - (5) When marked corrosion appears.
      - (6) Wire rope of a type not described herein shall be removed from service when 4 percent of the total number of wires composing such rope are found to be broken in one lay.
    - (b) Wire rope removed from service due to defects shall be plainly marked or identified as being unfit for further use on cranes, hoists, and other load-carrying devices.
    - (c) The ratio between the rope diameter and the drum, block, sheave, or pulley tread diameter shall be such that the rope will adjust itself to the bend without excessive wear, deformation, or injury. In no case shall the safe value of drums, blocks, sheaves, or pulleys be reduced when replacing such items unless compensating changes are made for rope used and for safe loading limits.
  - (vi) Drums, sheaves, and pulleys. Drums, sheaves, and pulleys shall be smooth and free from surface defects liable to injure rope. Drums, sheaves, or pulleys having eccentric bores or cracked hubs, spokes, or flanges shall be removed from service.
  - (vii) Connections. Connections, fittings, fastenings, and other parts used in connection with ropes and cables shall be of good quality and of proper size and strength, and shall be installed in accordance with the manufacturer's recommendations.
  - (viii) Socketing, splicing, and seizing.
    - (a) Socketing, splicing, and seizing of cables shall be performed only by qualified persons.
    - (b) All eye splices shall be made in an approved manner and wire rope thimbles of proper size shall be fitted in the eye, except that in slings the use of thimbles shall be optional.
    - (c) Wire rope clips attached with U-bolts shall have these bolts on the dead or short end of the rope. The U-bolt nuts shall be retightened immediately after initial load carrying use and at frequent intervals thereafter.
    - (d) When a wedge socket-type fastening is used, the dead or short end of the cable shall be clipped with a U-bolt or otherwise made secure against loosening.
    - (e) Fittings. Hooks, shackles, rings, pad eyes, and other fittings that show excessive wear or that have been bent, twisted, or otherwise damaged shall be removed from service.
    - (f) Running lines. Running lines of hoisting equipment located within 6 feet 6 inches of the ground or working level shall be boxed off or otherwise guarded, or the operating area shall be restricted.
    - (g) Number of wraps on drum. There shall be not less than two full wraps of hoisting cable on the drum of cranes and hoists at all times of operation.

- (h) Drum flanges. Drums shall have a flange at each end to prevent the cable from slipping off.
  - (i) Sheave guards. Bottom sheaves shall be protected by close fitting guards to prevent cable from jumping the sheave.
  - (j) Preventing abrasion. The reeving of a rope shall be so arranged as to minimize chafing or abrading while in use.
- (ix) Chains.
  - (a) Chains used in load carrying service shall be inspected before initial use and weekly thereafter.
  - (b) Chain shall be normalized or annealed periodically as recommended by the manufacturer.
  - (c) If at any time any 3-foot length of chain is found to have stretched one-third the length of a link it shall be discarded.
  - (d) Bolts or nails shall not be placed between two links to shorten or join chains.
  - (e) Broken chains shall not be spliced by inserting a bolt between two links with the head of the bolt and nut sustaining the load, or by passing one link through another and inserting a bolt or nail to hold it.
- (x) Fiber rope.
  - (a) Frozen fiber rope shall not be used in load carrying service.
  - (b) Fiber rope that has been subjected to acid or excessive heat shall not be used for load carrying purposes.
  - (c) Fiber rope shall be protected from abrasion by padding where it is fastened or drawn over square corners or sharp or rough surfaces.
- (25) [Reserved]
- (26) Mechanical stackers and unstackers.
  - (i) [Reserved]
  - (ii) Lumber lifting devices. Lumber lifting devices on all stackers shall be designed and arranged so as to minimize the possibility of lumber falling from such devices.
  - (iii) Blocking hoisting platform. Means shall be provided to positively block the hoisting platform when employees must go beneath the stacker or unstacker hoist.
  - (iv) Identifying controls. Every manually operated control switch shall be properly identified and so located as to be readily accessible to the operator.
  - (v) Locking main control switches. Main control switches shall be so designed that they can be locked in the open position.
  - (vi) Guarding side openings. The hoistway side openings at the top level of the stacker and unstacker shall be protected by enclosures of standard railings.
  - (vii) Guarding hoistway openings. When the hoist platform or top of the load is below the working platform, the hoistway openings shall be guarded.
  - (viii) Guarding lower landing area. The lower landing area of stackers and unstackers shall be guarded by enclosures that prevent entrance to the area or pit below the hoist platform. Entrances should be protected by electrically interlocked gates which, when open, will disconnect the power and set the hoist brakes. When the interlock is not installed, other positive means of protecting the entrance shall be provided.
  - (ix) Inspection. Every stacker and unstacker shall be inspected at frequent intervals and all defective parts shall be immediately repaired or replaced.
  - (x) Cleaning pits. Safe means of entrance and exit shall be provided to permit cleaning of pits.
  - (xi) Preventing entry to hazardous area. Where the return of trucks from unstacker to stacker is by mechanical power or gravity, adequate signs, warning devices, or barriers shall be erected to prevent entry into the hazardous area.
- (27) Lumber piling and storage.
  - (i) Pile foundations. In stacking units of lumber, pile foundations shall be designed and arranged to support maximum loads without sinking, sagging, or permitting the piles to topple. In unit package piles, substantial bolsters or unit separators shall be placed between each package directly over the stickers.
  - (ii) Stacking dissimilar unit packages. Long units of lumber shall not be stacked upon shorter packages except where a stable pile can be made with the use of package separators.

- (iii) Unstable piles. Piles of lumber which have become unstable shall be immediately made safe, or the area into which they might fall shall be fenced or barricaded and employees prohibited from entering it.
- (iv) Stickers. Unit packages of lumber shall be provided with stickers as necessary to insure stability under ordinary operating conditions.
- (v) Sticker alignment. Stickers shall extend the full width of the package, shall be uniformly spaced, and shall be aligned one above the other. Stickers may be lapped with a minimum overlapping of 12 inches. Stickers shall not protrude more than 2 inches beyond the sides of the package.
- (vi) Pile height. The height of unit package piles shall be dependent on the dimensions of the packages and shall be such as to provide stability under normal operating conditions. Adjacent lumber piles may be tied together with separators to increase stability.
- (28) Lumber loading. Loads shall be built and secured to insure stability in transit.
- (29) Burners.
  - (i) Guying. If the burner stack is not self-supporting, it shall be guyed or otherwise supported.
  - (ii) Runway. The conveyor runway to the burner shall be equipped with a standard handrail. If the runway crosses a roadway or thoroughfare, standard toe boards shall be provided in addition.
- (30) Vehicles.
  - (i) Scope. Vehicles shall include all mobile equipment normally used in sawmill, planing mill, storage, shipping, and yard operations.
  - (ii) Warning signals and spark arrestors. All vehicles shall be equipped with audible warning signals and where practicable shall have spark arrestors.
  - (iii) Lights. All vehicles operated in the dark or in poorly lighted areas shall be equipped with head and tail lights.
  - (iv) Overhead guard. All vehicles operated in areas where overhead hazards exist shall be equipped with an approved overhead guard. See American National Standard Safety Code for Powered Industrial Trucks, B56.1-1969, which is incorporated by reference as specified in §1910.6.
  - (v) Platform guard. Where the operator is exposed to hazard from backing the vehicle into objects, an approved platform guard shall be provided and so arranged as to not impede exit of driver from vehicle.
  - (vi) [Reserved]
  - (vii) Operation in buildings. Vehicles powered by internal combustion engines shall not operate in buildings unless the buildings are adequately ventilated.
  - (viii) Load limits. No vehicle shall be operated with loads exceeding its safe load capacity.
  - (ix) Brakes. All vehicles shall be equipped with brakes capable of holding and controlling the vehicle and capacity load upon any incline or grade over which they may be operated.
  - (x) [Reserved]
  - (xi) Carriers.
    - (a) Carriers shall be so designed and constructed that the operator's field of vision shall not be unnecessarily restricted.
    - (b) Carriers shall be provided with an access ladder or equivalent.
  - (xii) Lumber hauling trucks.
    - (a) On trucks where movement of load on stopping would endanger the operator, a substantial bulkhead shall be installed behind the operator's seat. This shall extend to the top of the operator's compartment.
    - (b) Stakes, stake pockets, racks, tighteners, and binders shall provide adequate means to secure the load against any movement during transit.
    - (c) Where rollers are used, at least two shall be equipped with locks which shall be locked when supporting loads during transit.
- (31) Traffic control and flow.
  - (i) Hazardous crossings. Railroad tracks and other hazardous crossings shall be plainly posted.
  - (ii) Restricted overhead clearance. All areas of restricted side or overhead clearance shall be plainly marked.



- (iii) Pickup and unloading points. Pickup and unloading points and paths for lumber packages on conveyors and transfers and other areas where accurate spotting is required, shall be plainly marked and wheel stops provided where necessary.
  - (iv) Aisles, passageways, and roadways. Aisles, passageways, and roadways shall be sufficiently wide to provide safe side clearance. One-way aisles may be used for two-way traffic if suitable turnouts are provided.
- (d) Log handling, sorting, and storage.
  - (1) Log unloading methods, equipment, and facilities.
    - (i) Unloading methods.
      - (a) Stakes and chocks which trip shall be constructed in such manner that the tripping mechanism that releases the stake or chocks is activated at the opposite side of the load being tripped.
      - (b) Binders on logs shall not be released prior to securing with unloading lines or other unloading device.
      - (c) Binders shall be released only from the side on which the unloader operates, except when released by remote control devices or except when person making release is protected by racks or stanchions or other equivalent means.
      - (d) Loads on which a binder is fouled by the unloading machine shall have an extra binder or metal band of equal strength placed around the load, or the load shall be otherwise secured so the fouled binder can be safely removed.
    - (ii) Unloading equipment and facilities.
      - (a) Machines used for hoisting, unloading, or lowering logs shall be equipped with brakes capable of controlling or holding the maximum load in midair.
      - (b) The lifting cylinders of all hydraulically operated log handling machines shall be equipped with a positive device for preventing the uncontrolled lowering of the load or forks in case of a failure in the hydraulic system.
      - (c) A limit switch shall be installed on powered log handling machines to prevent the lift arms from traveling too far in the event the control switch is not released in time.
      - (d) When forklift-type machines are used to load trailers, a means of securing the loading attachment to the fork shall be installed and used.
      - (e) A-frames and similar log unloading devices shall have adequate height to provide safe clearance for swinging loads and to provide for adequate crotch lines and spreader bar devices.
      - (f) Log handling machines used to stack logs or lift loads above operator's head shall be equipped with adequate overhead protection.
      - (g) All mobile log handling machines shall be equipped with headlights and backup lights.
      - (h) Unloading devices shall be equipped with a horn or other plainly audible signaling device.
      - (i) Movement of unloading equipment shall be coordinated by audible or hand signals when operator's vision is impaired or operating in the vicinity of other employees.
      - (j) Wood pike poles shall be made of straight-grained, select material. Metal or conductive pike poles shall not be used around exposed energized electrical conductors. Defective, blunt, or dull pike poles shall not be used.
  - (2) Log unloading and storage areas.
    - (i) General.
      - (a) Log dumps, booms, ponds, or storage areas used at night shall be illuminated in accordance with the requirements of American National Standard A11.1-1965 (R-1970) Standard Practice for Industrial Lighting, which is incorporated by reference as specified in §1910.6.
      - (b) Log unloading areas shall be arranged and maintained to provide a safe working area.
      - (c) Where skids are used, space adequate to clear a man's body shall be maintained between the top of the skids and the ground.
      - (d) Signs prohibiting unauthorized foot or vehicle traffic in log unloading and storage areas shall be posted.
    - (ii) Water log dumps.

- (a) Ungrounded electrically powered hoists using handheld remote control in grounded locations, such as log dumps or mill log lifts, shall be actuated by circuits operating at less than 50 volts to ground.
- (b) Roadbeds at log dumps shall be of sufficient width and evenness to insure safe operation of equipment.
- (c) An adequate brow log or skid timbers or the equivalent shall be provided where necessary. Railroad-type dumps, when located where logs are dumped directly into water or where entire loads are lifted from vehicle, may be exempted providing such practice does not create a hazardous exposure of personnel or equipment.
- (d) Unloading lines shall be arranged so that it is not necessary for the employees to attach them from the pond or dump side of the load except when entire loads are lifted from the log-transporting vehicle.
- (e) Unloading lines, crotch lines, or equally effective means shall be arranged and used in a manner to minimize the possibility of any log from swinging or rolling back.
- (f) When logs are unloaded with peavys or similar manual methods, means shall be provided and used that will minimize the danger from rolling or swinging logs.
- (g) Guardrails, walkways, and standard handrails shall be installed
- (h) Approved life rings (see: 46 CFR 160.099 and 46 CFR 160.050) with line attached and maintained to retain buoyancy shall be provided.
- (iii) Log booms and ponds.
  - (a) Walkways and floats shall be installed and securely anchored to provide adequate passageway for employees.
  - (b) All regular boom sticks and foot logs shall be reasonably straight, with no protruding knots and bark, and shall be capable of supporting, above the water line at either end, the weight of an employee and equipment.
  - (c) Permanent cable swifters shall be so arranged that it will not be necessary to roll boom sticks in order to attach or detach them.
  - (d) Periodic inspection of cable or dogging lines shall be made to determine when repair or removal from service is necessary.
  - (e) The banks of the log pond in the vicinity of the log haul shall be reinforced to prevent caving in.
  - (f) Artificial log ponds shall be drained, cleaned, and refilled when unhealthy stagnation or pollution occurs.
  - (g) Employees whose duties require them to work from boats, floating logs, boom sticks, or walkways along or on water shall be provided with and shall wear appropriate buoyant devices while performing such duties.
  - (h) Stiff booms shall be two float logs wide secured by boom chains or other connecting devices, and of a width adequate for the working needs. Walking surfaces shall be free of loose material and maintained in good repair.
  - (i) Boom sticks shall be fastened together with adequate crossties or couplings.
  - (j) Floating donkeys or other power-driven machinery used on booms shall be placed on a raft or float with enough buoyancy to keep the deck well above water.
  - (k) All sorting gaps shall have a substantial stiff boom on each side.
- (iv) Pond boats and rafts. The applicable provisions of the Standard for Fire Protection for Motorcraft, NFPA No. 302-1968, which is incorporated by reference as specified in §1910.6 shall be complied with.
  - (a) Decks of pond boats shall be covered with nonslip material.
  - (b) Powered pond boats or rafts shall be provided with at least one approved fire extinguisher, and one lifering with line attached.
  - (c) Boat fuel shall be transported and stored in approved safety containers. Refer to §1910.155(c)(3) for definition of approved.
  - (d) Inspection, maintenance, and ventilation of the bilge area shall be provided to prevent accumulation of highly combustible materials.
  - (e) Adequate ventilation shall be provided for the cabin area on enclosed cabin-type boats to prevent accumulation of harmful gases or vapors.
- (v) Dry deck storage.

- (a) Dry deck storage areas shall be kept orderly and shall be maintained in a condition which is conducive to safe operation of mobile equipment.
  - (b) Logs shall be stored in a safe and orderly manner, and roadways and traffic lanes shall be maintained at a width adequate for safe travel of log handling equipment.
  - (c) Logs shall be arranged to minimize the chance of accidentally rolling from the deck.
- (vi) Log hauls and slips.
  - (a) Walkways along log hauls shall have a standard handrail on the outer edge, and cleats or other means to assure adequate footing and enable employees to walk clear of the log chute.
  - (b) Log haul bull chains or cable shall be designed, installed, and maintained to provide adequate safety for the work need.
  - (c) Log haul gear and bull chain drive mechanism shall be guarded.
  - (d) Substantial troughs for the return strand of log haul chains shall be provided over passageways.
  - (e) Log haul controls shall be located and identified to operate from a position where the operator will, at all times, be in the clear of logs, machinery, lines, and rigging. In operations where control is by lever exposed to incoming logs, the lever shall be arranged to operate the log haul only when moved toward the log slip or toward the log pond.
  - (f) A positive stop shall be installed on all log hauls to prevent logs from traveling too far ahead in the mill.
  - (g) Overhead protection shall be provided for employees working below logs being moved to the log deck.
  - (h) Log wells shall be provided with safeguards to minimize the possibility of logs rolling back into well from log deck.
- (3) Log decks
  - (i) Access. Safe access to the head rig shall be provided.
  - (ii) Stops. Log decks shall be provided with adequate stops, chains, or other safeguards to prevent logs from rolling down the deck onto the carriage or its runway.
  - (iii) Barricade. A barricade or other positive stop of sufficient strength to stop any log shall be erected between the sawyer's stand and the log deck.
  - (iv) Loose chains. Loose chains from overhead canting devices or other equipment shall not be allowed to hang over the log deck in such manner as to strike employees.
  - (v) Swing saws. Swing saws on log decks shall be equipped with a barricade and stops for protection of employees who may be on the opposite side of the log haul chute.
  - (vi) Drag saws. Where reciprocating log cutoff saws (drag saws) are provided, they shall not project into walkway or aisle.
  - (vii) Circular cutoff saws. Circular log bucking or cutoff saws shall be so located and guarded as to allow safe entrance to and exit from the building.
  - (viii) Entrance doorway. Where the cutoff saw partially blocks the entrance from the log haul runway, the entrance shall be guarded.
- (4) Mechanical barkers.
  - (i) Rotary barkers. Rotary barking devices shall be so guarded as to protect employees from flying chips, bark, or other extraneous material.
  - (ii) Elevating ramp. If an elevating ramp or gate is used, it shall be provided with a safety chain, hook, or other means of suspension while employees are underneath.
  - (iii) Area around barkers. The hazardous area around ring barkers and their conveyors shall be fenced off or posted as a prohibited area for unauthorized persons.
  - (iv) Enclosing hydraulic barkers. Hydraulic barkers shall be enclosed with strong baffles at the inlet and outlet. The operator shall be protected by adequate safety glass or equivalent.
  - (v) Holddown rolls. Holddown rolls shall be installed at the infeed and outfeed sections of mechanical ring barkers to control the movement of logs.
- (e) Log breakdown and related machinery and facilities.
  - (1) Log carriages and carriage runways.
    - (i) Bumpers. A substantial stop or bumper with adequate shock-absorptive qualities shall be installed at each end of the carriage runway.

- (ii) Footing. Rider-type carriages shall be floored to provide secure footing and a firm working platform for the block setter.
- (iii) Sheave housing. Sheaves on rope-driven carriages shall be guarded at floor line with substantial housings.
- (iv) Carriage control. A positive means shall be provided to prevent unintended movement of the carriage. This may involve a control locking device, a carriage tie-down, or both.
- (v) Barriers and warning signs. A barrier shall be provided to prevent employees from entering the space necessary for travel of the carriage, with headblocks fully retracted, for the full length and extreme ends of carriage runways. Warning signs shall be posted at possible entry points to this area.
- (vi) Overhead clearance. For a rider-type carriage adequate overhead clear space above the carriage deck shall be provided for the full carriage runway length.
- (vii) Sweeping devices. Carriage track sweeping devices shall be used to keep track rails clear of debris.
- (viii) Dogs. Dogging devices shall be adequate to secure logs, cants, or boards, during sawing operations.
- (2) Head saws.
  - (i) Band head saws.
    - (a) Band head saws shall not be operated at speeds in excess of those recommended by the manufacturer
    - (b) Band head saws shall be thoroughly inspected for cracks, splits, broken teeth, and other defects. A bandsaw with a crack greater than one-tenth the width of the saw shall not be placed in service until width of saw is reduced to eliminate crack, until cracked section is removed, or crack development is stopped.
    - (c) Provisions shall be made for alerting and warning employees before starting band head saws, and measures shall be taken to insure that all persons are in the clear.
  - (ii) Bandsaw wheels.
    - (a) No bandsaw wheel shall be run at a peripheral speed in excess of that recommended by the manufacturer. The manufacturer's recommended maximum speed shall be stamped in plainly legible figures on some portion of the wheel.
    - (b) Band head saw wheels shall be subjected to monthly inspections. Hubs, spokes, rims, bolts, and rivets shall be thoroughly examined in the course of such inspections. A loose or damaged hub, a rim crack, or loose spokes shall make the wheel unfit for service.
    - (c) Band wheels shall be completely encased or guarded, except for a portion of the upper wheel immediately around the point where the blade leaves the wheel, to permit operator to observe movement of equipment. Necessary ventilating and observation ports may be permitted. Substantial doors or gates are allowed for repair, lubrication, and saw changes; such doors or gates shall be closed securely during operation. Band head rigs shall be equipped with a saw catcher or guard of substantial construction.
  - (iii) Single circular head saws.
    - (a) Circular head saws shall not be operated at speeds in excess of those specified by the manufacturer. Maximum speed shall be etched on the saw.
    - (b) Circular head saws shall be equipped with safety guides which can be readily adjusted without use of hand tools.
    - (c) The upper saw of a double circular mill shall be provided with a substantial hood or guard. A screen or other suitable device shall be placed so as to protect the sawyer from flying particles.
    - (d) All circular sawmills where live rolls are not used behind the head saw shall be equipped with a spreader wheel or splitter.
  - (iv) Twin circular head saws. Twin circular head saw rigs such as scrag saws shall meet the specifications for single circular head saws in paragraph (e)(1)(iii) of this section where applicable.
  - (v) Whole-log sash gang saws (Swedish gangs).
    - (a) Cranks, pitman rods, and other moving parts shall be adequately guarded.

- (b) Feed rolls shall be enclosed by a cover over the top, front, and open ends except where guarded by location. Drive mechanism to feed rolls shall be enclosed.
  - (c) Carriage cradles of whole-log sash gang saws (Swedish gangs), shall be of adequate height to prevent logs from kicking out while being loaded.
- (3) Resaws.
  - (i) Band resaws. Band resaws shall meet the specifications for band head saws as required by paragraph (e)(2)(i) of this section.
  - (ii) Circular gang resaws.
    - (a) Banks of circular gang resaws shall be guarded by a hood.
    - (b) Circular gang resaws shall be provided with safety fingers or other antikickback devices.
    - (c) Circular gang resaws shall not be operated at speeds exceeding those recommended by the manufacturer.
    - (d) [Reserved]
    - (e) Feed rolls shall be guarded.
    - (f) Each circular gang resaw, except self-feed saws with a live roll or wheel at back of saw, shall be provided with spreaders.
  - (iii) Sash gang resaws. Sash gang resaws shall meet the safety specifications of whole-log sash gang saws in accordance with the requirements of paragraph (e)(2)(v) of this section.
- (4) Trimmer saws.
  - (i) Maximum speed. Trimmer saws shall not be run at peripheral speeds in excess of those recommended by the manufacturer.
  - (ii) Guards.
    - (a) Trimmer saws shall be guarded in front by adequate baffles to protect against flying debris and they shall be securely bolted to a substantial frame. These guards for a series of saws shall be set as close to the top of the trimmer table as is practical.
    - (b) The end saws on trimmer shall be guarded.
    - (c) The rear of trimmer saws shall have a guard the full width of the saws and as much wider as practical.
  - (iii) Safety stops. Automatic trimmer saws shall be provided with safety stops or hangers to prevent saws from dropping on table.
- (5) Edgers.
  - (i) Location.
    - (a) Where vertical arbor edger saws are located ahead of the main saw, they shall be so guarded that an employee cannot contact any part of the edger saw from his normal position.
    - (b) Edgers shall not be located in the main roll case behind the head saws.
  - (ii) Guards.
    - (a) The top and the openings in end and side frames of edgers shall be adequately guarded and gears and chains shall be fully housed. Guards may be hinged or otherwise arranged to permit oiling and the removal of saws.
    - (b) All edgers shall be equipped with pressure feed rolls.
    - (c) Pressure feed rolls on edgers shall be guarded against accidental contact.
  - (iii) Antikickback devices.
    - (a) Edgers shall be provided with safety fingers or other approved methods of preventing kickbacks or guarding against them. A barricade in line with the edger, if properly fenced off, may be used if safety fingers are not feasible to install.
    - (b) A controlling device shall be installed and located so that the operator can stop the feed mechanism without releasing the tension of the pressure rolls.
  - (iv) Operating speed of live rolls. Live rolls and tailing devices in back of edger shall operate at a speed not less than the speed of the edger feed rolls.
- (6) Planers.
  - (i) Guards.
    - (a) All cutting heads shall be guarded.
    - (b) Side head hoods shall be of sufficient height to safeguard the head setscrew.
    - (c) Pressure feed rolls and "pineapples" shall be guarded.

- (d) Levers or controls shall be so arranged or guarded as to reduce the possibility of accidental operation.
- (f) Dry kilns and facilities.
  - (1) Kiln foundations. Dry kilns shall be constructed upon solid foundations to prevent tracks from sagging
  - (2) Passageways. A passageway shall be provided to give adequate clearance on at least one side or in the center of end-piled kilns and on two sides of cross-piled kilns.
  - (3) Doors.
    - (i) Main kiln doors.
      - (a) Main kiln doors shall be provided with a method of holding them open while kiln is being loaded.
      - (b) Counterweights on vertical lift doors shall be boxed or otherwise guarded.
      - (c) Adequate means shall be provided to firmly secure main doors, when they are disengaged from carriers and hangers, to prevent toppling.
    - (ii) Escape doors.
      - (a) If operating procedures require access to kilns, kilns shall be provided with escape doors that operate easily from the inside, swing in the direction of exit, and are located in or near the main door at the end of the passageway.
      - (b) Escape doors shall be of adequate height and width to accommodate an average size man.
  - (4) Pits. Pits shall be well ventilated, drained, and lighted, and shall be large enough to safely accommodate the kiln operator together with operating devices such as valves, dampers, damper rods, and traps.
  - (5) Steam mains. All high-pressure steam mains located in or adjacent to an operating pit shall be covered with heat-insulating material.
  - (6) Ladders. A fixed ladder, in accordance with the requirements of §1910.27 or other adequate means shall be provided to permit access to the roof. Where controls and machinery are mounted on the roof, a permanent stairway with standard handrail shall be installed in accordance with the requirements of §1910.24.
  - (7) Chocks. A means shall be provided for chocking or blocking cars.
  - (8) Kiln tender room. A warm room shall be provided for kiln employees to stay in during cold weather after leaving a hot kiln.

#### **§1910.266 Logging operations**

- (a) Table of contents.
 

This paragraph contains the list of paragraphs and appendices contained in this section.

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Appendix A--Minimum First-aid Supplies

Appendix B--Minimum First-aid Training

Appendix C--Corresponding ISO Agreements

**(b) Scope and Application.**

- (1) This standard establishes safety practices, means, methods and operations for all types of logging, regardless of the end use of the wood. These types of logging include, but are not limited to, pulpwood and timber harvesting and the logging of sawlogs, veneer bolts, poles, pilings and other forest products. This standard does not cover the construction or use of cable yarding systems.
- (2) This standard applies to all logging operations as defined by this section.
- (3) Hazards and working conditions not specifically addressed by this section are covered by other applicable sections of Part 1910.

**(c) Definitions applicable to this section.**

**Arch.** An open-framed trailer or built-up framework used to suspend the leading ends of trees or logs when they are skidded.

**Backcut (felling cut).** The final cut in a felling operation.

**Ballistic nylon.** A nylon fabric of high tensile properties designed to provide protection from lacerations.

**Buck.** To cut a felled tree into logs.

**Butt.** The bottom of the felled part of a tree.

**Cable yarding.** The movement of felled trees or logs from the area where they are felled to the landing on a system composed of a cable suspended from spars and/or towers. The trees or logs may be either dragged across the ground on the cable or carried while suspended from the cable.

**Chock.** A block, often wedge shaped, which is used to prevent movement; e.g., a log from rolling, a wheel from turning.

**Choker.** A sling used to encircle the end of a log for yarding. One end is passed around the load, then through a loop eye, end fitting or other device at the other end of the sling. The end that passed through the end fitting or other device is then hooked to the lifting or pulling machine.

**Danger tree.** A standing tree that presents a hazard to employees due to conditions such as, but not limited to, deterioration or physical damage to the root system, trunk, stem or limbs, and the direction and lean of the tree.

**Debark.** To remove bark from trees or logs.

**Deck.** A stack of trees or logs.

**Designated person.** An employee who has the requisite knowledge, training and experience to perform specific duties.

**Domino felling.** The partial cutting of multiple trees which are left standing and then pushed over with a pusher tree.

**Fell (fall).** To cut down trees.

**Feller (faller).** An employee who fells trees.

**Grounded.** The placement of a component of a machine on the ground or on a device where it is firmly supported.

**Guarded.** Covered, shielded, fenced, enclosed, or otherwise protected by means of suitable enclosures, covers, casings, shields, troughs, railings, screens, mats, or platforms, or by location, to prevent injury.

**Health care provider.** A health care practitioner operating with the scope of his/her license, certificate, registration or legally authorized practice.

**Landing.** Any place where logs are laid after being yarded, and before transport from the work site.

**Limbing.** To cut branches off felled trees.

**Lodged tree (hung tree).** A tree leaning against another tree or object which prevents it from falling to the ground.

**Log.** A segment sawed or split from a felled tree, such as, but not limited to, a section, bolt, or tree length.

**Logging operations.** Operations associated with felling and moving trees and logs from the stump to the point of delivery, such as, but not limited to, marking, felling, bucking, limbing, debarking, chipping, yarding, loading, unloading, storing, and transporting machines, equipment and personnel from one site to another.

**Machine.** A piece of stationary or mobile equipment having a self-contained powerplant, that is operated off-road and used for the movement of material. Machines include but are not limited to tractors, skidders, front-end loaders, scrapers, graders, bulldozers, swing yarders, log stackers and mechanical felling devices, such as tree shears and feller-bunchers.

**Rated capacity.** The maximum load a system, vehicle, machine or piece of equipment was designed by the manufacturer to handle.

**Root wad.** The ball of a tree root and dirt that is pulled from the ground when a tree is uprooted.

**Serviceable condition.** A state or ability of a tool, machine, vehicle or other device to operate as it was intended by the manufacturer to operate.

**Skidding.** The yarding of trees or logs by pulling or towing them across the ground.

**Slope (grade).** The increase or decrease in altitude over a horizontal distance expressed as a percentage. For example, a change of altitude of 20 feet (6 m) over a horizontal distance of 100 feet (30 m) is expressed as a 20 percent slope.

**Snag.** Any standing dead tree or portion thereof.

**Spring pole.** A tree, segment of a tree, limb, or sapling which is under stress or tension due to the pressure or weight of another object.

**Tie down.** Chain, cable, steel strips or fiber webbing and binders attached to a truck, trailer or other conveyance as a means to secure loads and to prevent them from shifting or moving when they are being transported.

**Undercut.** A notch cut in a tree to guide the direction of the tree fall and to prevent splitting or kickback.

**Vehicle.** A car, bus, truck, trailer or semi-trailer that is used for transportation of employees or movement of material.

**Winching.** The winding of cable or rope onto a spool or drum.

**Yarding.** The movement of logs from the place they are felled to a landing.

**(d) General requirements.**

**(1) Personal protective equipment.**

- (i)** The employer shall assure that personal protective equipment, including any personal protective equipment provided by an employee, is maintained in a serviceable condition.
- (ii)** The employer shall assure that personal protective equipment, including any personal protective equipment provided by an employee, is inspected before initial use during each workshift. Defects or damage shall be repaired or the unserviceable personal protective equipment shall be replaced before work is commenced.
- (iii)** The employer shall provide, at no cost to the employee, and assure that each employee handling wire rope wears cotton gloves or other hand protection which the employer demonstrates provides equivalent protection.



- (iv) The employer shall provide, at no cost to the employee, and assure that each employee who operates a chain saw wears ballistic nylon leg protection or other leg protection the employer demonstrates provides equivalent protection. The leg protection shall cover the full length of the thigh to the top of the boot on each leg to protect against contact with a moving chain saw. Exception: This requirement does not apply when an employee is working as a climber if the employer demonstrates that a greater hazard is posed by wearing leg protection in the particular situation, or when an employee is working from a vehicular mounted elevating and rotating work platform meeting the requirements of 29 CFR 1910.68.
- (v) The employer shall assure that each employee shall wears foot protection, such as heavy-duty logging boots, that are waterproof or water repellant, cover and provide support to the ankle, and protect the employee from penetration by chain saws. Sharp, calk-soled boots or other slip-resistant type boots may be worn where the employer demonstrates that they are necessary for the employee's job, the terrain, the timber type, and the weather conditions, provided that foot protection otherwise required by this paragraph is met.
- (vi) The employer shall provide, at no cost to the employee, and assure that each employee who works in an area where there is potential for head injury from falling or flying objects wears head protection meeting the requirements of subpart I of Part 1910.
- (vii) The employer shall provide, at no cost to the employee, and assure that each employee who works in an area there is a potential for injury due to falling or flying objects wears eye and face protection meeting the requirements of subpart I of Part 1910. Logger-type mesh screens may be worn where the employer demonstrates that they provide equivalent protection.
- (2) First-aid kits.
  - (i) The employer shall provide first-aid kits at each work site where felling is being conducted, at each landing, and on each employee transport vehicle. The number of first-aid kits and the content of each kit shall reflect the degree of isolation, the number of employees, and the hazards reasonably anticipated at the work site.
  - (ii) At a minimum, each first-aid kit shall contain the items listed in Appendix A at all times.
  - (iii) The number and content of first-aid kits shall be reviewed and approved at least annually by a health care provider.
  - (iv) The employer shall maintain the contents of each first-aid kit in a serviceable condition.
- (3) Seat belts. For each vehicle or machine (equipped with ROPS/FOPS or overhead guards), including any vehicle or machine provided by an employee, the employer shall assure:
  - (i) That a seat belt is provided for each vehicle or machine operator;
  - (ii) That each employee uses the available seat belt while the vehicle or machine is being operated;
  - (iii) That each employee securely and tightly fastens the seat belt to restrain the employee within the vehicle or machine cab;
  - (iv) That each machine seat belt meets the requirements of the Society of Automotive Engineers Standard SAE J386, June 1985, "Operator Restraint Systems for Off-Road Work Machines" which is incorporated by reference as specified in §1910.6.
  - (v) That seat belts are not removed from any vehicle or machine. The employer shall replace each seat belt which has been removed from any vehicle or machine that was equipped with seat belts at the time of manufacture; and
  - (vi) That each seat belt is maintained in a serviceable condition.
- (4) Fire extinguishers. The employer shall provide and maintain portable fire extinguishers on each machine and vehicle in accordance with the requirements of subpart L of Part 1910.
- (5) Environmental conditions. All work shall terminate and each employee shall move to a place of safety when environmental conditions, such as but not limited to, electrical storms, strong winds which may affect the fall of a tree, heavy rain or snow, extreme cold, dense fog, fires, mudslides, and darkness, create a hazard for the employee in the performance of the job.
- (6) Work areas.
  - (i) Employees shall be spaced and the duties of each employee shall be organized so the actions of one employee will not create a hazard for any other employee.

- (ii) Work areas shall be assigned so that trees cannot fall into an adjacent occupied work area. The distance between adjacent occupied work areas shall be at least two tree lengths of the trees being felled. The distance between adjacent occupied work areas shall reflect the degree of slope, the density of the growth, the height of the trees, the soil structure and other hazards reasonably anticipated at that work site. A distance of greater than two tree lengths shall be maintained between adjacent occupied work areas on any slope where rolling or sliding of trees or logs is reasonably foreseeable.
  - (iii) Each employee performing a logging operation at a logging work site shall work in a position or location that is within visual or audible contact with another employee.
  - (iv) The employer shall account for each employee at the end of each workshift.
- (7) Signaling and signal equipment.
  - (i) Hand signals or audible contact, such as but not limited to, whistles, horns, or radios, shall be utilized whenever noise, distance, restricted visibility, or other factors prevent clear understanding of normal voice communications between employees.
  - (ii) Engine noise, such as from a chain saw, is not an acceptable means of signaling. Other locally and regionally recognized signals may be used.
  - (iii) Only a designated person shall give signals, except in an emergency.
- (8) Overhead electric lines.
  - (i) Logging operations near overhead electric lines shall be done in accordance with the requirements of 29 CFR 1910.333(c)(3).
  - (ii) The employer shall notify the power company immediately if a felled tree makes contact with any power line. Each employee shall remain clear of the area until the power company advises that there are no electrical hazards.
- (9) Flammable and combustible liquids.
  - (i) Flammable and combustible liquids shall be stored, handled, transported, and used in accordance with the requirements of subpart H of Part 1910.
  - (ii) Flammable and combustible liquids shall not be transported in the driver compartment or in any passenger-occupied area of a machine or vehicle.
  - (iii) Each machine, vehicle, and portable powered tool shall be shut off during fueling. Diesel-powered machines and vehicles may be fueled while they are at idle, provided that continued operation is intended and that the employer follows safe fueling and operating procedures.
  - (iv) Flammable and combustible liquids, including chain-saw and diesel fuel, may be used to start a fire, provided the employer assures that in the particular situation its use does not create a hazard for an employee.
- (10) Explosives and blasting agents.
  - (i) Explosives and blasting agents shall be stored, handled, transported, and used in accordance with the requirements of subpart H of part 1910.
  - (ii) Only a designated person shall handle or use explosives and blasting agents.
  - (iii) Explosives and blasting agents shall not be transported in the driver compartment or in any passenger-occupied area of a machine or vehicle.
- (e) Hand and portable powered tools.**
  - (1) General requirements.
    - (i) The employer shall assure that each hand and portable powered tool, including any tool provided by an employee, is maintained in serviceable condition.
    - (ii) The employer shall assure that each tool, including any tool provided by an employee, is inspected before initial use during each workshift. At a minimum, the inspection shall include the following:
      - (A) Handles and guards, to assure that they are sound, tight-fitting, properly shaped, free of splinters and sharp edges, and in place;
      - (B) Controls, to assure proper function;
      - (C) Chain-saw chains, to assure proper adjustment;
      - (D) Chain-saw mufflers, to assure that they are operational and in place;
      - (E) Chain brakes and nose shielding devices, to assure that they are in place and function properly;

- (F) Heads of shock, impact-driven and driving tools, to assure that there is no mushrooming;
- (G) Cutting edges, to assure that they are sharp and properly shaped; and
- (H) All other safety devices, to assure that they are in place and function properly.
- (iii) The employer shall assure that each tool is used only for purposes for which it has been designed.
- (iv) When the head of any shock, impact-driven or driving tool begins to chip, it shall be repaired or removed from service.
- (v) The cutting edge of each tool shall be sharpened in accordance with manufacturer's specifications whenever it becomes dull during the workshift.
- (vi) Each tool shall be stored in the provided location when not being used at a work site.
- (vii) Racks, boxes, holsters or other means shall be provided, arranged and used for the transportation of tools so that a hazard is not created for any vehicle operator or passenger.
- (2) Chain saws.
  - (i) Each chain saw placed into initial service after the effective date of this section shall be equipped with a chain brake and shall otherwise meet the requirements of the ANSI B175.1-1991 "Safety Requirements for Gasoline-Powered Chain Saws", which is incorporated by reference as specified in §1910.6. Each chain saw placed into service before the effective date of this section shall be equipped with a protective device that minimizes chain-saw kickback. No chain-saw kickback device shall be removed or otherwise disabled.
  - (ii) Each gasoline-powered chain saw shall be equipped with a continuous pressure throttle control system which will stop the chain when pressure on the throttle is released.
  - (iii) The chain saw shall be operated and adjusted in accordance with the manufacturer's instructions.
  - (iv) The chain saw shall be fueled at least 10 feet (3 m) from any open flame or other source of ignition.
  - (v) The chain saw shall be started at least 10 feet (3 m) from the fueling area.
  - (vi) The chain saw shall be started on the ground or where otherwise firmly supported. Drop starting a chain saw is prohibited.
  - (vii) The chain saw shall be started with the chain brake engaged.
  - (viii) The chain saw shall be held with the thumbs and fingers of both hands encircling the handles during operation unless the employer demonstrates that a greater hazard is posed by keeping both hands on the chain saw in that particular situation.
  - (ix) The chain-saw operator shall be certain of footing before starting to cut. The chain saw shall not be used in a position or at a distance that could cause the operator to become off-balance, to have insecure footing, or to relinquish a firm grip on the saw.
  - (x) Prior to felling any tree, the chain-saw operator shall clear away brush or other potential obstacles which might interfere with cutting the tree or using the retreat path.
  - (xi) The chain saw shall not be used to cut directly overhead.
  - (xii) The chain saw shall be carried in a manner that will prevent operator contact with the cutting chain and muffler.
  - (xiii) The chain saw shall be shut off or the throttle released before the feller starts his retreat.
  - (xiv) The chain saw shall be shut down or the chain brake shall be engaged whenever a saw is carried further than 50 feet (15.2 m). The chain saw shall be shut down or the chain brake shall be engaged when a saw is carried less than 50 feet if conditions such as, but not limited to, the terrain, underbrush and slippery surfaces, may create a hazard for an employee.
- (f) Machines.
  - (1) General requirements.
    - (i) The employer shall assure that each machine, including any machine provided by an employee, is maintained in serviceable condition.
    - (ii) The employer shall assure that each machine, including any machine provided by an employee, is inspected before initial use during each workshift. Defects or damage shall be repaired or the unserviceable machine shall be replaced before work is commenced.

- (iii) The employer shall assure that operating and maintenance instructions are available on the machine or in the area where the machine is being operated. Each machine operator and maintenance employee shall comply with the operating and maintenance instructions.
- (2) Machine operation.
  - (i) The machine shall be started and operated only by a designated person.
  - (ii) Stationary logging machines and their components shall be anchored or otherwise stabilized to prevent movement during operation.
  - (iii) The rated capacity of any machine shall not be exceeded.
  - (iv) To maintain stability, the machine must be operated within the limitations imposed by the manufacturer as described in the operating and maintenance instructions for that machine.
  - (v) Before starting or moving any machine, the operator shall determine that no employee is in the path of the machine.
  - (vi) The machine shall be operated only from the operator's station or as otherwise recommended by the manufacturer.
  - (vii) The machine shall be operated at such a distance from employees and other machines such that operation will not create a hazard for an employee.
  - (viii) No employee other than the operator shall ride on any mobile machine unless seating, seat belts and other protection equivalent to that provided for the operator are provided.
  - (ix) No employee shall ride on any load.
  - (x) Before the operator leaves the operator's station of a machine, it shall be secured as follows:
    - (A) The parking brake or brake locks shall be applied;
    - (B) The transmission shall be placed in the manufacturer's specified park position; and
    - (C) Each moving element such as, but not limited to blades, buckets, saws and shears, shall be lowered to the ground or otherwise secured.
  - (xi) If a hydraulic or pneumatic storage device can move the moving elements such as, but not limited to, blades, buckets, saws and shears, after the machine is shut down, the pressure or stored energy from the element shall be discharged as specified by the manufacturer.
  - (xii) The rated capacity of any vehicle transporting a machine shall not be exceeded.
  - (xiii) The machine shall be loaded, secured and unloaded so that it will not create a hazard for any employee.
- (3) Protective structures.
  - (i) Each tractor, skidder, swing yarder, log stacker, log loader and mechanical felling device, such as tree shears or feller-buncher, placed into initial service after February 9, 1995 shall be equipped with falling object protective structure (FOPS) and/or rollover protective structure (ROPS). The employer shall replace FOPS or ROPS which have been removed from any machine. Exception: This requirement does not apply to machines which are capable of 360 degree rotation.
  - (ii) (A) ROPS shall be tested, installed, and maintained in serviceable condition.  
 (B) Each machine manufactured after August 1, 1996, shall have ROPS tested, installed, and maintained in accordance with the Society of Automotive Engineers SAEJ1040, April 1988, "Performance Criteria for Rollover Protective Structures (ROPS) for Construction, Earthmoving, Forestry, and Mining Machines", which is incorporated by reference as specified in §1910.6.
  - (iii) FOPS shall be installed, tested and maintained in accordance with the Society of Automotive Engineers SAE J231, January 1981, "Minimum Performance Criteria for Falling Object Protective Structures (FOPS)" which is incorporated by reference as specified in §1910.6.
  - (iv) ROPS and FOPS shall meet the requirements of the Society of Automotive Engineers SAE J397, April 1988, "Deflection Limiting Volume-ROPS/FOPS Laboratory Evaluation", which is incorporated by reference as specified in §1910.6.
  - (v) Each protective structure shall be of a size that does not impede the operator's normal movements.
  - (vi) The overhead covering of each cab shall be of solid material and shall extend over the entire canopy.

- (vii) Each machine manufactured after August 1, 1996, shall have a cab that is fully enclosed with mesh materials with openings no greater than 2 inches (5.08 cm) at its least dimension. The cab may be enclosed with other material(s) where the employer demonstrates such material(s) provides equivalent protection and visibility. Exception: Equivalent visibility is not required for the lower portion of the cab where there are control panels or similar obstructions in the cab, or where visibility is not necessary for safe operation of the machine.
- (viii) Each machine manufactured on or before August 1, 1996 shall have a cab which meets the requirements specified in paragraphs (f)(3)(vii) or a protective canopy for the operator which meets the following requirements:
  - (A) The protective canopy shall be constructed to protect the operator from injury due to falling trees, limbs, saplings or branches which might enter the compartment side areas and from snapping winch lines or other objects;
  - (B) The lower portion of the cab shall be fully enclosed with solid material, except at entrances, to prevent the operator from being injured from obstacles entering the cab;
  - (C) The upper rear portion of the cab shall be fully enclosed with open mesh material with openings of such size as to reject the entrance of an object larger than 2 inches in diameter. It shall provide maximum rearward visibility; and
  - (D) Open mesh shall be extended forward as far as possible from the rear corners of the cab sides so as to give the maximum protection against obstacles, branches, etc., entering the cab area.
- (ix) The enclosure of the upper portion of each cab shall allow maximum visibility.
- (x) When transparent material is used to enclose the upper portion of the cab, it shall be made of safety glass or other material that the employer demonstrates provides equivalent protection and visibility.
- (xi) Transparent material shall be kept clean to assure operator visibility.
- (xii) Transparent material that may create a hazard for the operator, such as but not limited to, cracked, broken or scratched safety glass, shall be replaced.
- (xiii) Deflectors shall be installed in front of each cab to deflect whipping saplings and branches. Deflectors shall be located so as not to impede visibility and access to the cab.
- (xiv) The height of each cab entrance shall be at least 52 inches (1.3 meters) from the floor of the cab.
- (xv) Each machine operated near cable yarding operations shall be equipped with sheds or roofs of sufficient strength to provide protection from breaking lines.
- (4) Overhead guards. Each forklift shall be equipped with an overhead guard meeting the requirements of the American Society of Mechanical Engineers, ASME B56.6-1992 (with addenda), "Safety Standard for Rough Terrain Forklift Trucks", which is incorporated by reference as specified in §1910.6.
- (5) Machine access.
  - (i) Machine access systems, meeting the specifications of the Society of Automotive Engineers, SAE J185, June 1988, "Recommended Practice for Access Systems for Off-Road Machines", which is incorporated by reference as specified in §1910.6 shall be provided for each machine where the operator or any other employee must climb onto the machine to enter the cab or to perform maintenance.
  - (ii) Each machine cab shall have a second means of egress.
  - (iii) Walking and working surfaces of each machine and machine work station shall have a slip resistant surface to assure safe footing.
  - (iv) The walking and working surface of each machine shall be kept free of waste, debris and any other material which might result in fire, slipping, or falling.
- (6) Exhaust systems.
  - (i) The exhaust pipes on each machine shall be located so exhaust gases are directed away from the operator.
  - (ii) The exhaust pipes on each machine shall be mounted or guarded to protect each employee from accidental contact.
  - (iii) The exhaust pipes shall be equipped with spark arresters. Engines equipped with turbochargers do not require spark arresters.

- (iv) Each machine muffler provided by the manufacturer, or their equivalent, shall be in place at all times the machine is in operation.
- (7) Brakes.
  - (i) Service brakes shall be sufficient to stop and hold each machine and its rated load capacity on the slopes over which it is being operated.
  - (ii) Each machine placed into initial service on or after September 8, 1995 shall also be equipped with: back-up or secondary brakes that are capable of stopping the machine regardless of the direction of travel or whether the engine is running; and parking brakes that are capable of continuously holding a stopped machine stationary.
- (8) Guarding.
  - (i) Each machine shall be equipped with guarding to protect employees from exposed moving elements, such as but not limited to, shafts, pulleys, belts on conveyors, and gears, in accordance with the requirements of subpart O of part 1910.
  - (ii) Each machine used for debarking, limbing and chipping shall be equipped with guarding to protect employees from flying wood chunks, logs, chips, bark, limbs and other material in accordance with the requirements of subpart O of part 1910.
  - (iii) The guarding on each machine shall be in place at all times the machine is in operation.
- (g) Vehicles.
  - (1) The employer shall assure that each vehicle used to perform any logging operation is maintained in serviceable condition.
  - (2) The employer shall assure that each used to perform any logging operation is inspected before initial use during each workshift. Defects or damage shall be repaired on the unserviceable vehicle shall be replaced before work is commenced.
  - (3) The employer shall assure that operating and maintenance instructions are available in each vehicle. Each vehicle operator and maintenance employee shall comply with the operating and maintenance instructions.
  - (4) The employer shall assure that each vehicle operator has a valid operator's license for the class of vehicle being operated.
  - (5) Mounting steps and handholds shall be provided for each vehicle wherever it is necessary to prevent an employee from being injured when entering or leaving the vehicle.
  - (6) The seats of each vehicle shall be securely fastened.
  - (7) The requirements of paragraphs (f)(2)(iii), (f)(2)(v), (f)(2)(vii), (f)(2)(x), (f)(2)(xiii), and (f)(7) of this section shall also apply to each vehicle used to transport any employee off public roads or to perform any logging operation, including any vehicle provided by an employee.
- (h) Tree harvesting.
  - (1) General requirements.
    - (i) Trees shall not be felled in a manner that may create a hazard for an employee, such as but not limited to, striking a rope, cable, power line, or machine.
    - (ii) The immediate supervisor shall be consulted when unfamiliar or unusually hazardous conditions necessitate the supervisor's approval before cutting is commenced.
    - (iii) While manual felling is in progress, no yarding machine shall be operated within two tree lengths of trees being manually felled. Exception: This provision does not apply to yarding machines performing tree pulling operations.
    - (iv) No employee shall approach a feller closer than two tree lengths of trees being felled until the feller has acknowledged that it is safe to do so, unless the employer demonstrates that a team of employees is necessary to manually fell a particular tree.
    - (v) No employee shall approach a mechanical felling operation closer than two tree lengths of the trees being felled until the machine operator has acknowledged that it is safe to do so.
    - (vi) Each danger tree shall be felled, removed or avoided. Each danger tree, including lodged trees and snags, shall be felled or removed using mechanical or other techniques that minimize employee exposure before work is commenced in the area of the danger tree. If the danger tree is not felled or removed, it shall be marked and no work shall be conducted within two tree lengths of the danger tree unless the employer demonstrates that a shorter distance will not create a hazard for an employee.
    - (vii) Each danger tree shall be carefully checked for signs of loose bark, broken branches and limbs or other damage before they are felled or removed. Accessible loose bark and other

damage that may create a hazard for an employee shall be removed or held in place before felling or removing the tree.

- (viii) Felling on any slope where rolling or sliding of trees or logs is reasonably foreseeable shall be done uphill from, or on the same level as, previously felled trees.
- (ix) Domino felling of trees is prohibited.  
**Note to paragraph (h)(1)(ix):** The definition of domino felling does not include the felling of a single danger tree by felling another single tree into it.
- (2) Manual felling.
  - (i) Before felling is started, the feller shall plan and clear a retreat path. The retreat path shall extend diagonally away from the expected felling line unless the employer demonstrates that such a retreat path poses a greater hazard than an alternate retreat path. Once the backcut has been made the feller shall immediately move a safe distance away from the tree on the retreat path.
  - (ii) Before each tree is felled, conditions such as, but not limited to, snow and ice accumulation, the wind, the lean of tree, dead limbs, and the location of other trees, shall be evaluated by the feller and precautions taken so a hazard is not created for an employee.
  - (iii) Each tree shall be checked for accumulations of snow and ice. Accumulations of snow and ice that may create a hazard for an employee shall be removed before felling is commenced in the area or the area shall be avoided.
  - (iv) When a spring pole or other tree under stress is cut, no employee other than the feller shall be closer than two trees lengths when the stress is released.
  - (v) An undercut shall be made in each tree being felled unless the employer demonstrates that felling the particular tree without an undercut will not create a hazard for an employee. The undercut shall be of a size so the tree will not split and will fall in the intended direction.
  - (vi) A backcut shall be made in each tree being felled. The backcut shall leave sufficient hinge wood to hold the tree to the stump during most of its fall so that the hinge is able to guide the tree's fall in the intended direction.
  - (vii) The backcut shall be above the level of the horizontal facecut in order to provide an adequate platform to prevent kickback. Exception: The backcut may be at or below the horizontal facecut in tree pulling operations.  
**Note to paragraph (h)(2)(vii):** This requirement does not apply to open face felling where two angled facecuts rather a horizontal facecut are used.
- (3) Limbing and bucking.
  - (i) Limbing and bucking on any slope where rolling or sliding of trees or logs is reasonably foreseeable shall be done on the uphill side of each tree or log.
  - (ii) Before bucking or limbing wind-thrown trees, precautions shall be taken to prevent the root wad, butt or logs from striking an employee. These precautions include, but are not limited to, chocking or moving the tree to a stable position.
- (4) Chipping (in-woods locations).
  - (i) Chipper access covers or doors shall not be opened until the drum or disc is at a complete stop.
  - (ii) Infeed and discharge ports shall be guarded to prevent contact with the disc, knives, or blower blades.
  - (iii) The chipper shall be shut down and locked out in accordance with the requirements of 29 CFR 1910.147 when an employee performs any servicing or maintenance.
  - (iv) Detached trailer chippers shall be chocked during usage on any slope where rolling or sliding of the chipper is reasonably foreseeable.
- (5) Yarding.
  - (i) No log shall be moved until each employee is in the clear.
  - (ii) Each choker shall be hooked and unhooked from the uphill side or end of the log, unless the employer demonstrates that it is not feasible in the particular situation to hook or unhook the choker from the uphill side. Where the choker is hooked or unhooked from the downhill side or end of the log, the log shall be securely chocked to prevent rolling, sliding or swinging.
  - (iii) Each choker shall be positioned near the end of the log or tree length.

- (iv) Each machine shall be positioned during winching so the machine and winch are operated within their design limits.
  - (v) No yarding line shall be moved unless the yarding machine operator has clearly received and understood the signal to do so. When in doubt, the yarding machine operator shall repeat the signal and wait for a confirming signal before moving any line.
  - (vi) No load shall exceed the rated capacity of the pallet, trailer, or other carrier.
  - (vii) Towed equipment, such as but not limited to, skid pans, pallets, arches, and trailers, shall be attached to each machine or vehicle in such a manner as to allow a full 90 degree turn; to prevent overrunning of the towing machine or vehicle; and to assure that the operator is always in control of the towed equipment.
  - (viii) The yarding machine or vehicle, including its load, shall be operated with safe clearance from all obstructions that may create a hazard for an employee.
  - (ix) Each yarded tree shall be placed in a location that does not create a hazard for an employee and an orderly manner so that the trees are stable before bucking or limbing is commenced.
- (6) Loading and unloading.
- (i) The transport vehicle shall be positioned to provide working clearance between the vehicle and the deck.
  - (ii) Only the loading or unloading machine operator and other personnel the employer demonstrates are essential shall be in the loading or unloading work area during this operation.
  - (iii) No transport vehicle operator shall remain in the cab during loading and unloading if the logs are carried or moved over the truck cab, unless the employer demonstrates that it is necessary for the operator to do so. Where the transport vehicle operator remains in the cab, the employer shall provide operator protection, such as but not limited to, reinforcement of the cab.
  - (iv) Each log shall be placed on a transport vehicle in an orderly manner and tightly secured.
  - (v) The load shall be positioned to prevent slippage or loss during handling and transport.
  - (vi) Each stake and chock which is used to trip loads shall be so constructed that the tripping mechanism is activated on the side opposite the release of the load.
  - (vii) Each tie down shall be left in place over the peak log to secure all logs until the unloading lines or other protection the employer demonstrates is equivalent has been put in place. A stake of sufficient strength to withstand the forces of shifting or moving logs, shall be considered equivalent protection provided that the logs are not loaded higher than the stake.
  - (viii) Each tie down shall be released only from the side on which the unloading machine operates, except as follows:
    - (A) When the tie down is released by a remote control device; and
    - (B) When the employee making the release is protected by racks, stanchions or other protection the employer demonstrates is capable of withstanding the force of the logs.
- (7) Transport. The transport vehicle operator shall assure that each tie down is tight before transporting the load. While enroute, the operator shall check and tighten the tie downs whenever there is reason to believe that the tie downs have loosened or the load has shifted.
- (8) Storage. Each deck shall be constructed and located so it is stable and provides each employee with enough room to safely move and work in the area.
- (i) Training.
- (1) The employer shall provide training for each employee, including supervisors, at no cost to the employee.
  - (2) Frequency. Training shall be provided as follows:
    - (i) As soon as possible but not later than the effective date of this section for initial training for each current and new employee;
    - (ii) Prior to initial assignment for each new employee;
    - (iii) Whenever the employee is assigned new work tasks, tools, equipment, machines or vehicles; and
    - (iv) Whenever an employee demonstrates unsafe job performance.
  - (3) Content. At a minimum, training shall consist of the following elements:



- (i) Safe performance of assigned work tasks;
  - (ii) Safe use, operation and maintenance of tools, machines and vehicles the employee uses or operates, including emphasis on understanding and following the manufacturer's operating and maintenance instructions, warnings and precautions;
  - (iii) Recognition of safety and health hazards associated with the employee's specific work tasks, including the use of measures and work practices to prevent or control those hazards;
  - (iv) Recognition, prevention and control of other safety and health hazards in the logging industry;
  - (v) Procedures, practices and requirements of the employer's work site; and
  - (vi) The requirements of this standard.
- (4) Training of an employee due to unsafe job performance, or assignment of new work tasks, tools, equipment, machines, or vehicles; may be limited to those elements in paragraph (i)(3) of this section which are relevant to the circumstances giving rise to the need for training.
- (5) Portability of training.
- (i) Each current employee who has received training in the particular elements specified in paragraph (i)(3) of this section shall not be required to be retrained in those elements.
  - (ii) Each new employee who has received training in the particular elements specified in paragraph (i)(3) of this section shall not be required to be retrained in those elements prior to initial assignment.
  - (iii) The employer shall train each current and new employee in those elements for which the employee has not received training.
  - (iv) The employer is responsible for ensuring that each current and new employee can properly and safely perform the work tasks and operate the tools, equipment, machines, and vehicles used in their job.
- (6) Each new employee and each employee who is required to be trained as specified in paragraph (i)(2) of this section, shall work under the close supervision of a designated person until the employee demonstrates to the employer the ability to safely perform their new duties independently.
- (7) First-aid training.
- (i) The employer shall assure that each employee, including supervisors, receives or has received first-aid and CPR training meeting at least the requirements specified in Appendix B.
  - (ii) The employer shall assure that each employee's first-aid and CPR training and/or certificate of training remain current.
- (8) All training shall be conducted by a designated person.
- (9) The employer shall assure that all training required by this section is presented in a manner that the employee is able to understand. The employer shall assure that all training materials used are appropriate in content and vocabulary to the educational level, literacy, and language skills of the employees being trained.
- (10) Certification of training.
- (i) The employer shall verify compliance with paragraph (i) of this section by preparing a written certification record. The written certification record shall contain the name or other identity of the employee trained, the date(s) of the training, and the signature of the person who conducted the training or the signature of the employer. If the employer relies on training conducted prior to the employee's hiring or completed prior to the effective date of this section, the certification record shall indicate the date the employer determined the prior training was adequate.
  - (ii) The most recent training certification shall be maintained.
- (11) Safety and health meetings. The employer shall hold safety and health meetings as necessary and at least each month for each employee. Safety and health meetings may be conducted individually, in crew meetings, in larger groups, or as part of other staff meetings.
- (j) Effective date. This section is effective February 9, 1995. All requirements under this section commence on the effective date.

- (k) Appendices. Appendices A and B of this section are mandatory. The information contained in Appendix C of this section is informational and is not intended to create any additional obligations not otherwise imposed or to detract from existing regulations.

**Appendix A to 1910.266**  
**First-aid Kits (Mandatory)**

The following list sets forth the minimally acceptable number and type of first-aid supplies for the first-aid kits required under paragraph (d)(2) of the logging standard. The contents of the first-aid kit listed should be adequate for small work sites, consisting of approximately two to three employees. When larger operations or multiple operations are being conducted at the same location, additional first-aid kits should be provided at the work site or additional quantities of supplies should be included in the first-aid kits:

1. Gauze pads (at least 4x4 inches).
2. Two large gauze pads (at least 8x10 inches).
3. Box adhesive bandages (band-aids).
4. One package gauze roller bandage at least 2 inches wide.
5. Two triangular bandages.
6. Wound cleaning agent such as sealed moistened towelettes.
7. Scissors.
8. At least one blanket.
9. Tweezers.
10. Adhesive tape.
11. Latex gloves.
12. Resuscitation equipment such as resuscitation bag, airway, or pocket mask.
13. Two elastic wraps
14. Splint.
15. Directions for requesting emergency assistance.

**Appendix B to 1910.266**  
**First-aid and CPR Training (Mandatory)**

The following is deemed to be the minimal acceptable first-aid and CPR training program for employees engaged in logging activities.

First-aid and CPR training shall be conducted using the conventional methods of training such as lecture, demonstration, practical exercise and examination (both written and practical). The length of training must be sufficient to assure that trainees understand the concepts of first aid and can demonstrate their ability to perform the various procedures contained in the outline below.

At a minimum, first-aid and CPR training shall consist of the following:

1. The definition of first aid.
2. Legal issues of applying first aid (Good Samaritan Laws).
3. Basic anatomy.
4. Patient assessment and first aid for the following:
  - a. Respiratory arrest.
  - b. Cardiac arrest.
  - c. Hemorrhage.
  - d. Lacerations/abrasions.
  - e. Amputations.
  - f. Musculoskeletal injuries.
  - g. Shock.
  - h. Eye injuries.
  - i. Burns.
  - j. Loss of consciousness.
  - k. Extreme temperature exposure (hypothermia/hyperthermia)
  - l. Paralysis
  - m. Poisoning.
  - n. Loss of mental functioning (psychosis/hallucinations, etc.). Artificial ventilation.

- o. Drug overdose.
- 5. CPR.
- 6. Application of dressings and slings.
- 7. Treatment of strains, sprains, and fractures.
- 8. Immobilization of injured persons.
- 9. Handling and transporting injured persons.
- 10. Treatment of bites, stings, or contact with poisonous plants or animals.

**Appendix C to 1910.266**  
**Comparable ISO Standards (Non-mandatory)**

The following International Labor Organization (ISO) standards are comparable to the corresponding Society of Automotive Engineers (Standards that are referenced in this standard.)

Utilization of the ISO standards in lieu of the corresponding SAE standards should result in a machine that meets the OSHA standard.

SAE standard	ISO standard	Subject
SAE J1040	ISO 3471-1	Performance Criteria for Rollover Protective Structures (ROPS) for Construction, Earthmoving, Forestry and Mining Machines.
SAE J397	ISO 3164	Deflection Limiting Volume--ROPS/FOPS Laboratory Evaluation.
SAE J231	ISO 3449	Minimum Performance Criteria for Falling Object Protective Structures (FOPS).
SAE J386	ISO 6683	Operator Restraint Systems for Off-Road Work Machines.
SAE J185	ISO 2897	Access Systems for Off-Road Machines.

**§12-77.1-2 Definitions.** As used in 29 CFR 1910.265 and 29 CFR 1910.266 and applied to this chapter:

"1910.23" means section 12-72-3.  
 "1910.24" means section 12-72-4.  
 "1910.25" means section 12-82-2.  
 "1910.26" means section 12-82-2.  
 "1910.27" means section 12-72-4.  
 "1910.68" means chapter 12-231.  
 "1910.106" means chapter 12-75.  
 "1910.110" means chapter 12-76.  
 "1910.141" means chapter 12-67.  
 "1910.147" means chapter 12-101.1.  
 "1910.178" means section 12-81-5.  
 "1910.219" means section 12-80-11.  
 "1910.333(c)(3)" means section 12-89-32(c)(3).  
 "1910.1000" means section 12-202-4.02.  
 "Subpart H of part 1910" means chapter 12-75.  
 "Subpart I of part 1910" means chapter 12-64.1.  
 "Subpart L of part 1910" means chapter 12-63.  
 "Subpart O of part 1910" means chapter 12-80. [Eff 8/10/95]  
 HRS §396-4) (Imp: HRS §396-4)

(Auth: